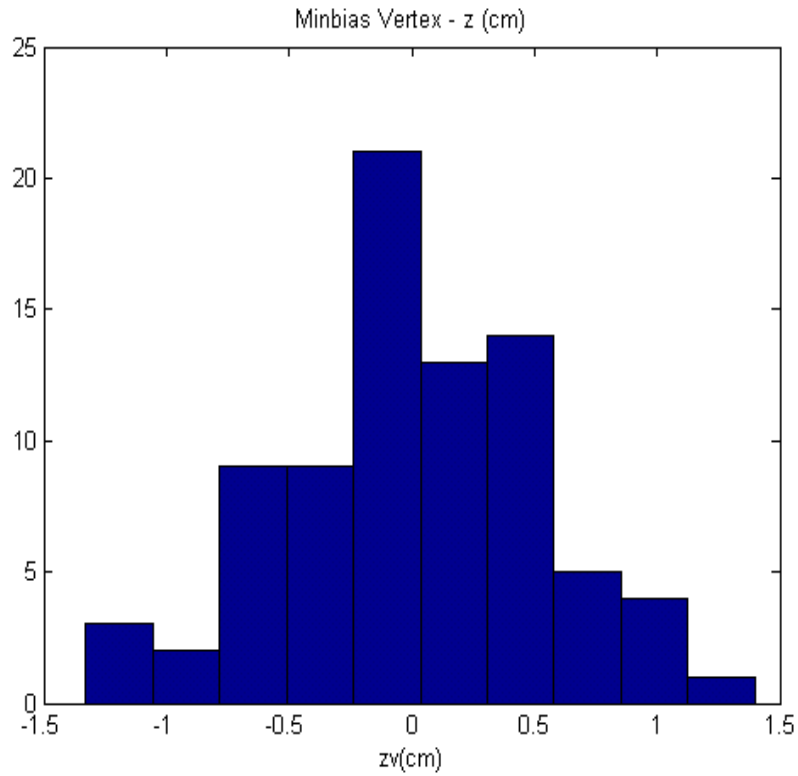
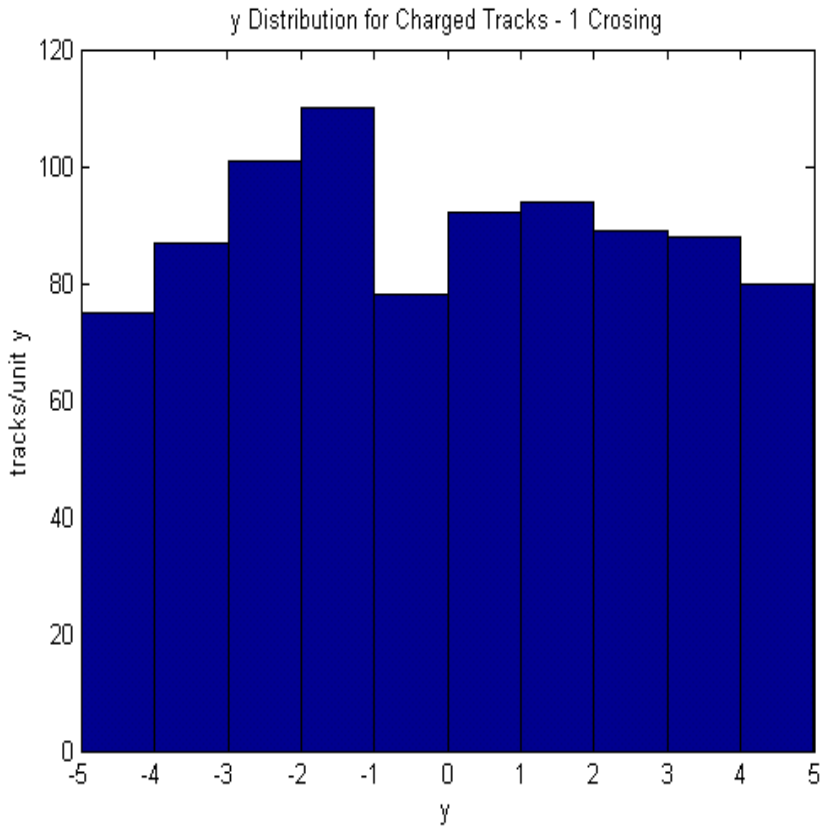
100 Minbias - Charged Tracks



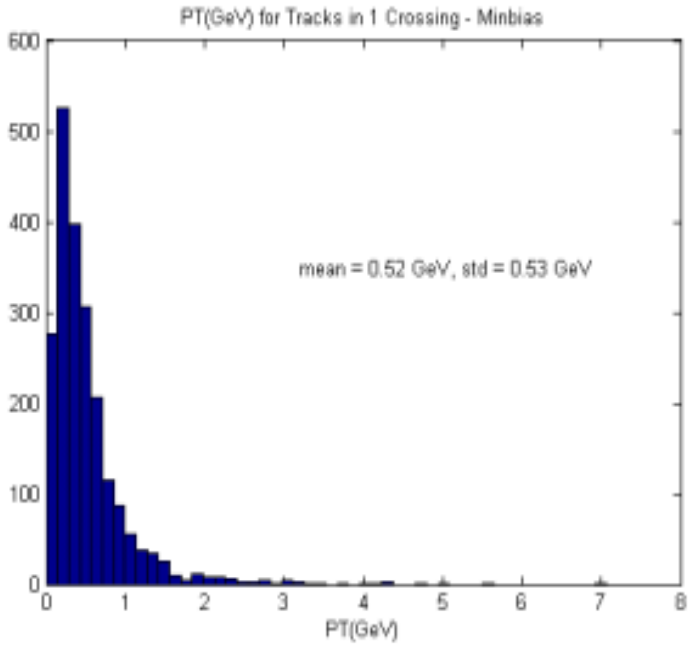
There is the vertex for the "signal" interaction in the crossing. The size of the bunch crossing is ~ 1 cm. The average number of interactions in a crossing is ~ 17.

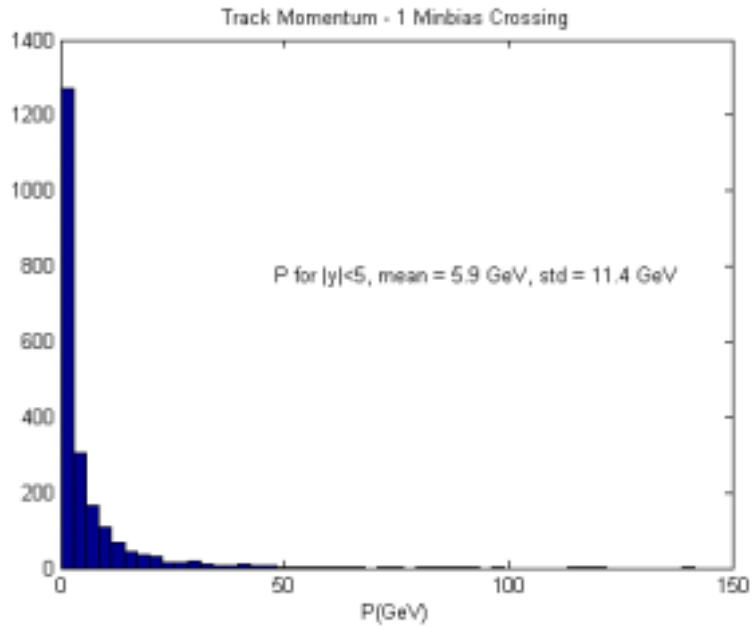
Charged Tracks



The density of charged tracks is ~ 90/17 ~ 5.3. This level is expected

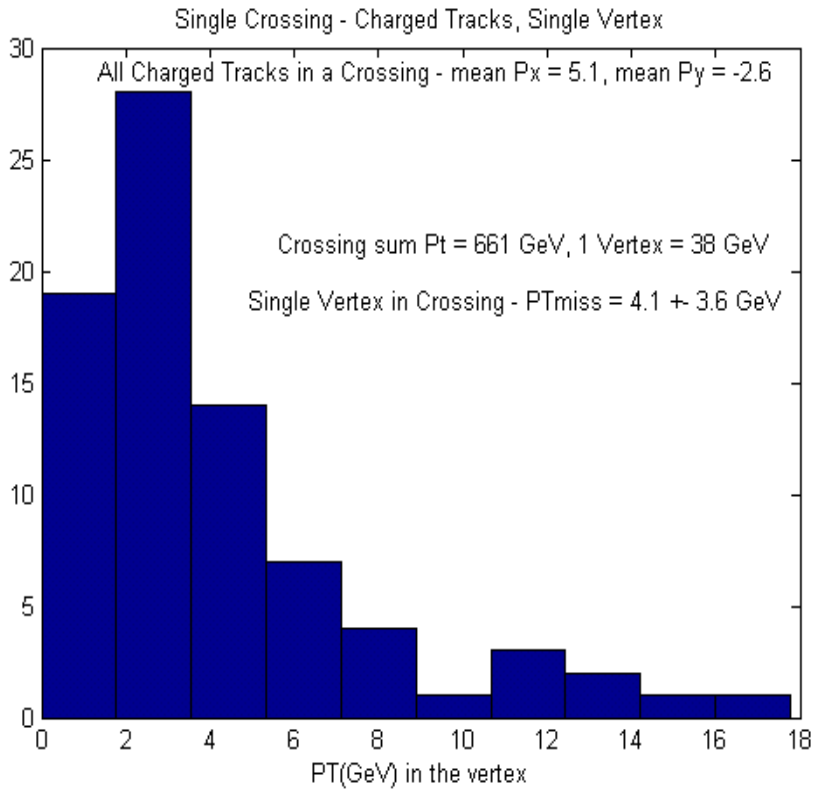
Momentum





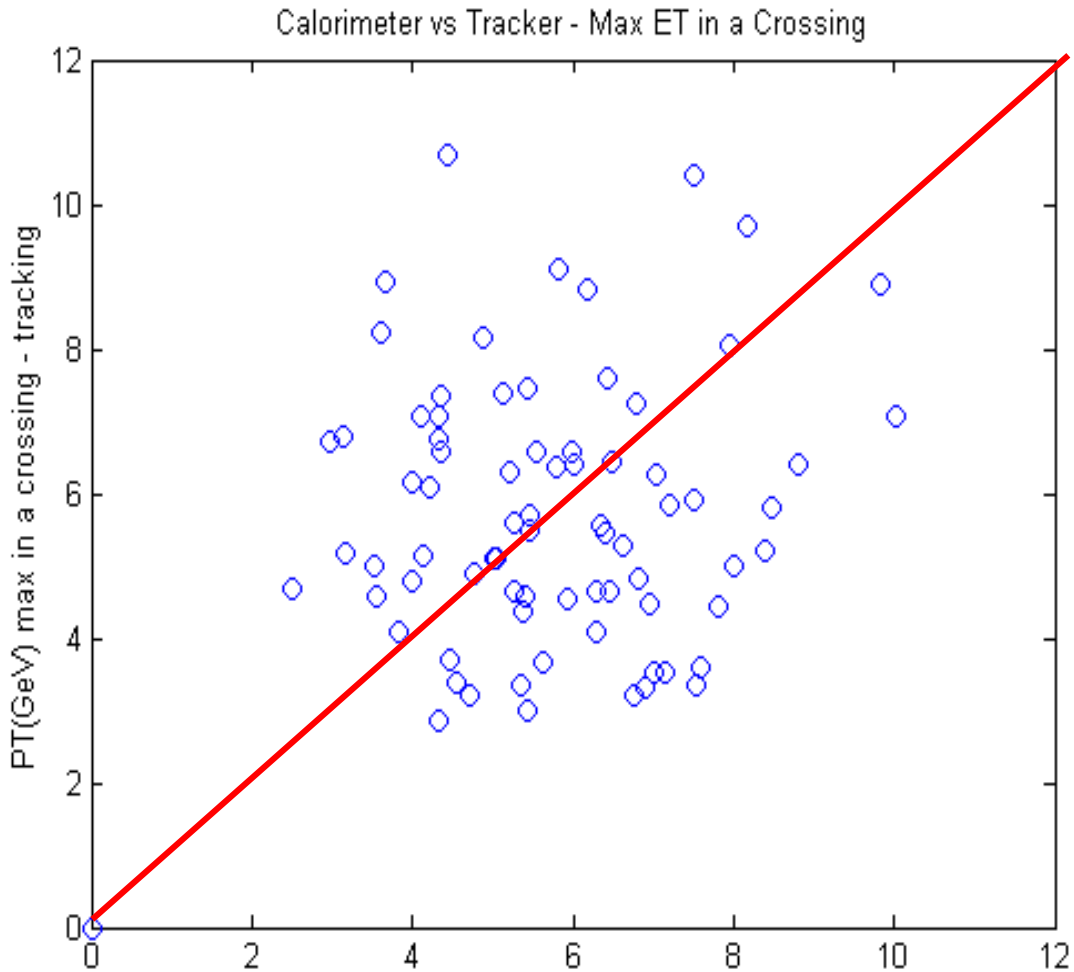
Mean transverse momentum is <PT> = 0.52 GeV.

Total Event and Crossing ET



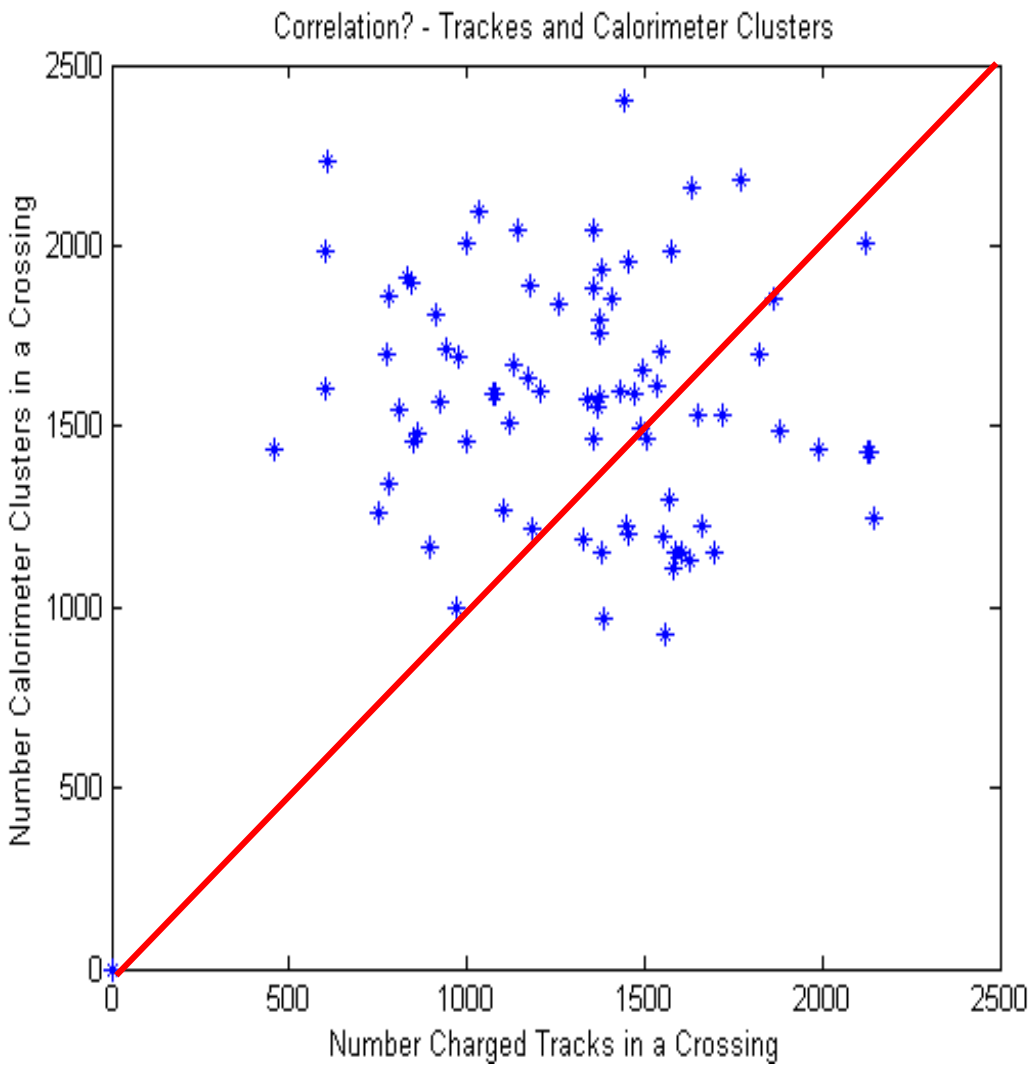
A single interaction for |y| < 5 has ~ 38 GeV ~ density 5 * dy=10 * 0.5 GeV. A crossing has ~ 17 times more energy. The fluctuations in a single interaction are less than those in a full crossing. Clearly, using only charged energy from a given interaction can reduce the missing ET found in a crossing. The full neutral energy remains, however.

Match Tracks and HCAL?



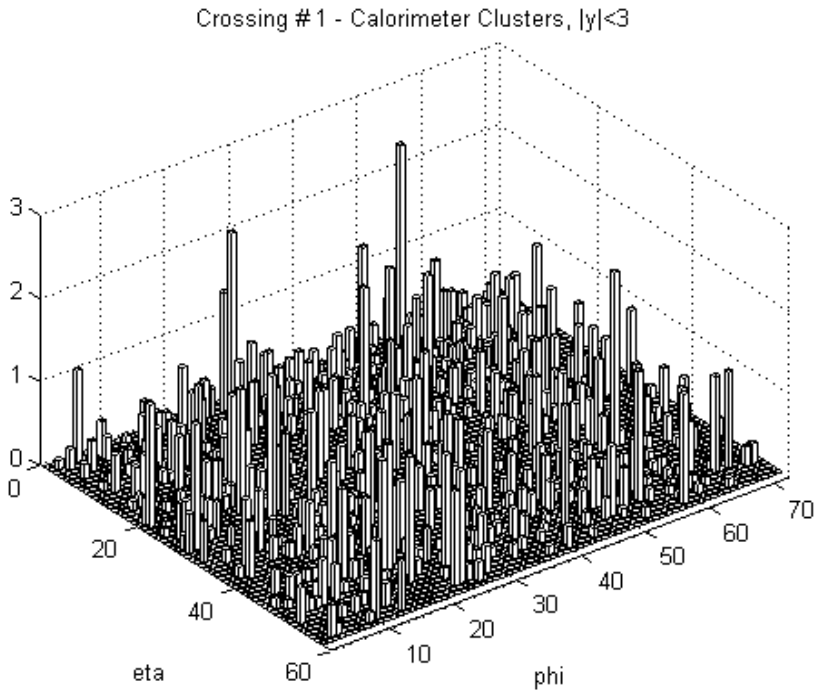
Find the maximum PT particle within a crossing for charged tracks and for calorimeter clusters. There is only a weak correlation, at best.

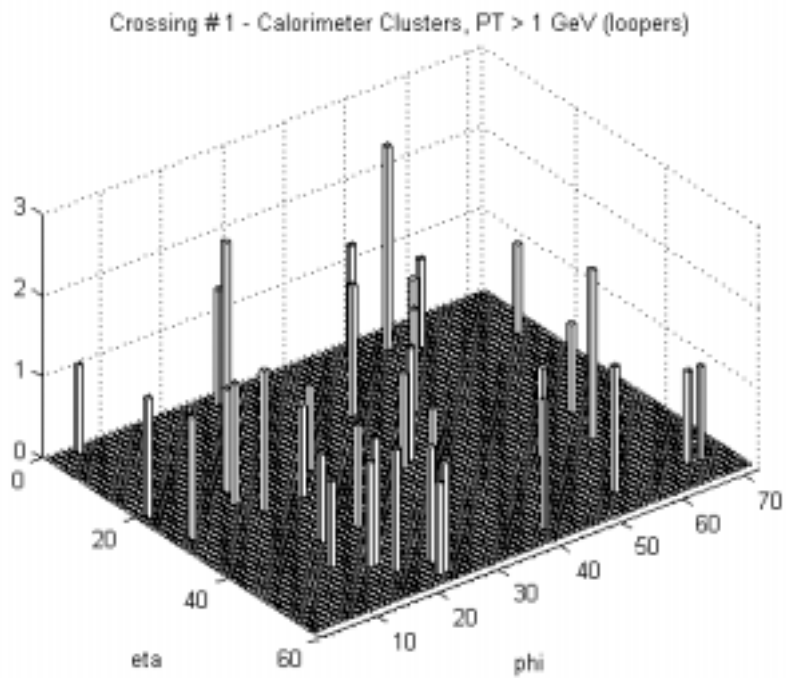
Tracks and Cal Clusters?



The correlation of the 2 multiplicities is not strong.

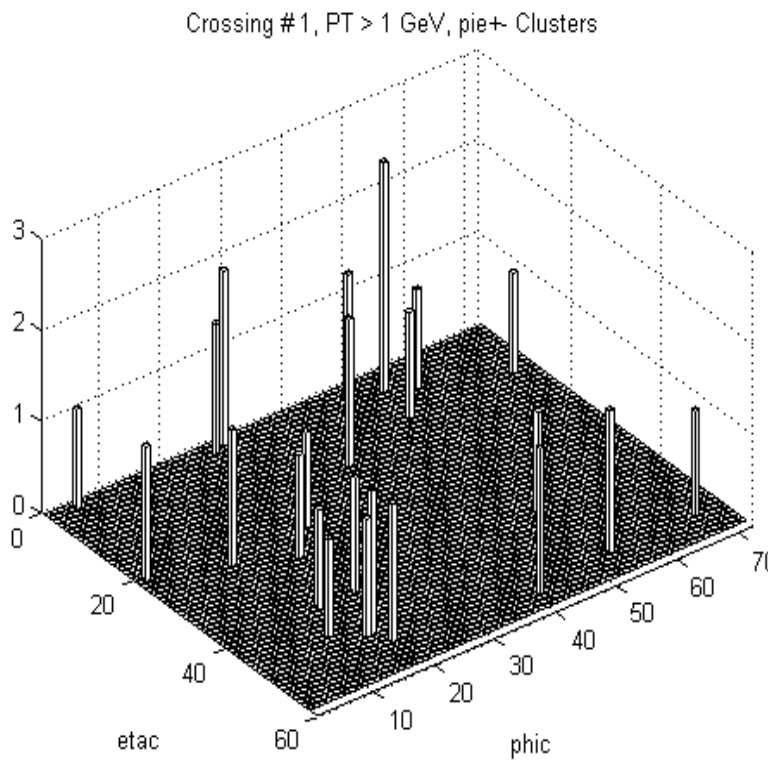
Calorimeter Clusters

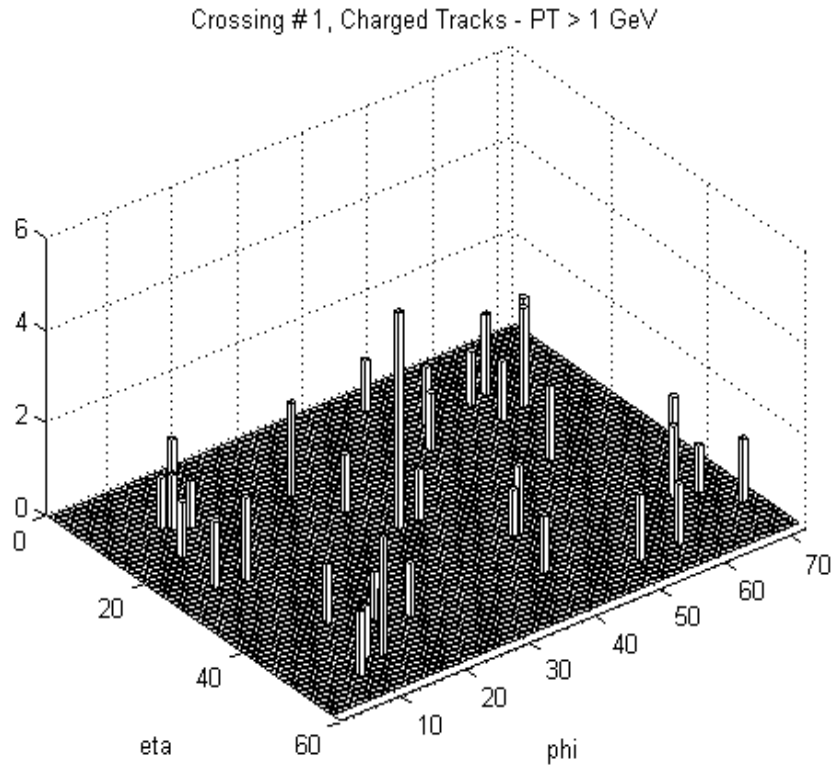




The calorimeter population is still sparse as ECAL is 25 times more finely grained than HCAL. There are very few deposits > 1 GeV - recall loopers mean that HB has PT > 1.6 GeV

Calorimeter - Tracks





Enter only calorimeter clusters with HCAL energy only or ECAL energy with matching HCAL. There appears to be no correlation between calorimeter energy and tracker energy. B field sweeping cannot explain this - the y~0 PT ~ 5 GeV track bends < 20% or 4 phi bins.